

CLAIMS

What is claimed is:

1. An atomizing nozzle for use in a misting system, said atomizing nozzle comprising:
 - a nozzle body formed of anodized aluminum, encompassing a fluid chamber, and having a body inlet end and a body outlet end;
 - a metallic orifice insert affixed to said nozzle body proximate said body outlet end; and
 - an impeller configured to reside within said fluid chamber.

2. An atomizing nozzle as claimed in claim 1 wherein said nozzle body comprises:
 - an insert recess proximate said body outlet end;
 - a body chamber configured to form at least a portion of said fluid chamber and formed in concatenation with said insert recess; and
 - a fluid inlet channel proximate said body inlet end and formed in concatenation with said body chamber.

3. An atomizing nozzle as claimed in claim 1 wherein said orifice insert comprises:

a substantially cylindrical insert body having an insert inlet end and an insert outlet end;

a substantially cylindrical insert chamber substantially coaxially formed within said insert body proximate said insert inlet end;

a substantially conical bevel substantially coaxially formed within said insert body proximate said insert outlet end; and

a substantially cylindrical outlet channel substantially coaxially formed within said insert body between said insert chamber and said insert outlet end.

4. An atomizing nozzle as claimed in claim 1 wherein said anodized aluminum is a first metal, and wherein said orifice insert is fabricated of a second metal.

5. An atomizing nozzle as claimed in claim 4 wherein said second metal is stainless steel.

6. An atomizing nozzle as claimed in claim 1 wherein:
said nozzle body comprises a body chamber;
said orifice insert comprises an insert chamber; and
said fluid chamber is formed of a concatenation of said body chamber and said fluid chamber.

7. An atomizing nozzle as claimed in claim 1 wherein said fluid chamber comprises:

a substantially cylindrical first chamber having a first chamber length, and having a first chamber diameter; and

a substantially cylindrical second chamber having a second chamber length and having a second chamber diameter greater than or equal to said first chamber diameter.

8. An atomizing nozzle as claimed in claim 7 wherein said fluid chamber has a fluid chamber length substantially equal to a sum of said first chamber length and said second chamber length.

9. An atomizing nozzle as claimed in claim 7 wherein:

said nozzle body comprises an inlet channel having an inlet channel diameter;

said orifice insert comprises an outlet channel having an outlet channel diameter; and

said impeller has an impeller diameter and an impeller length, wherein;

said impeller diameter is greater than said inlet channel diameter;

said impeller diameter is greater than said outlet channel diameter;

said impeller diameter is less than said first chamber diameter; and

said impeller length is less than a sum of said first and second chamber lengths.

10. . An atomizing nozzle as claimed in claim 1 wherein said impeller comprises:

an impeller length;

an impeller diameter;

an impeller inlet end;

an impeller outlet end, wherein said impeller inlet end is closer to said nozzle inlet end than said nozzle outlet end when said non-metallic impeller resides within said fluid chamber;

a planar surface at said impeller outlet end, wherein said planar surface is substantially circular, has a surface circumference, and has a surface diameter less than said impeller diameter; and

a plurality of grooves at said impeller outlet end, where each of said grooves has an outer edge substantially tangential to said surface circumference.

11. A method of manufacturing an atomizing nozzle for use in a misting system, said method comprising:

constructing an anodized aluminum nozzle body encompassing a first chamber;

fabricating a metallic orifice insert encompassing a second chamber;

producing an impeller;

inserting said impeller into said first chamber; and

affixing said orifice insert into said nozzle body.

12. A method as claimed in claim 11 wherein said constructing activity comprises:

forming an insert recess within said nozzle body, wherein said insert recess is substantially cylindrical and has a recess diameter;

forming said first chamber first within said nozzle body, wherein said first chamber is substantially cylindrical and has a first-chamber diameter less than said recess diameter;

forming an inlet channel within said nozzle body, wherein said inlet channel is substantially cylindrical and has an inlet-channel diameter less than said first-chamber diameter, and wherein said first chamber and said inlet channel are contiguous and substantially coaxial; and

anodizing said nozzle body.

13. A method as claimed in claim 12 wherein said non-metallic impeller has an impeller diameter less than said first-chamber diameter and greater than said inlet-channel diameter.

14. A method as claimed in claim 12 wherein said constructing activity additionally comprises forming threads upon said nozzle body.

15. A method as claimed in claim 11 wherein:

said constructing activity comprises forming an insert recess within said nozzle body; and

said affixing activity affixes said metallic orifice insert within said insert recess.

16. A method as claimed in claim 11 wherein said affixing activity affixes said orifice insert to said nozzle body by one of crimping and riveting.

17. A method as claimed in claim 11 wherein said fabricating activity comprises:

forming an insert body for said metallic orifice insert;

forming said second chamber as substantially a right cylinder within said insert body; and

forming an outlet channel within said insert body, wherein said outlet channel extends between said second chamber and an outside of said insert body.

18. A method as claimed in claim 11 wherein said producing activity comprises:

forming said impeller as substantially a cylinder having an impeller diameter;

forming a raised planar surface at a first end of said impeller, wherein said raised planar surface is substantially circular, has a surface circumference, and has a surface diameter less than said impeller diameter; and

forming a plurality of grooves at said first end of said impeller, wherein each of said grooves has an outer edge substantially tangential to said surface circumference.

19. A method as claimed in claim 11 wherein:

said constructing activity constructs said nozzle body of aluminum; and

said fabricating activity fabricates said metallic orifice insert of stainless steel.

20. An atomizing nozzle for use in a misting system, said atomizing nozzle comprising:

an anodized aluminum nozzle body having an inlet end, having an outlet end, having an insert recess proximate said outlet end, and encompassing a first portion of a fluid chamber;

a stainless steel orifice insert affixed to said nozzle body within said insert recess and encompassing a second portion of said fluid chamber; and

an impeller configured to reside within said fluid chamber.